

tion given by Daday for *vanhöffeni* has been used as a basis of comparison. The comparison with *diguetti* has been facilitated by a recent acquisition of a collection of 3 males and 1 female from near Reno, Nev. This represents a new locality record for this species as it had been previously known from only the type locality. In addition to the characters indicated in the foregoing table, *concaucus* differs from *diguetti* in a number of other features. The hinge line is proportionately much shorter, the umbones are less prominent in *diguetti*, and it does not have the "sway-back" appearance of *concaucus*. In *diguetti* the first antennae of the male extend only to the fifth or sixth segment

of the second antennae; the telson is more truncate, and the cercopods are proportionately shorter than in *concaucus*. Also, the "thumb" of the male gnathopods of *diguetti* are much more deeply cleft at the base than in *concaucus*. A tabulated comparison of the three species is given on the opposite page.

## REFERENCES

- DADAY DE DEES, E. *Monographie systematique des phyllopedes conchostraces*. Ann. Sci. Nat. Zool., ser. 9, 20: 39-330. 1915.  
 MACKIN, J. G. *Key to the species of Phyllopoda of Oklahoma and neighboring States*. Proc. Oklahoma Acad. Sci. 19: 45-47. 1939.  
 PENNAK, R. W. *Fresh-water invertebrates of the United States*: 769 pp. New York, 1953.

ZOOLOGY.—*Further studies on American millipeds of the family Euryuridae (Polydesmida)*. RICHARD L. HOFFMAN, Clifton Forge, Va.

My previous paper dealing with the American euryurids (1951) endeavored to provide a summary of the genera recognized by me at the time of its writing in early 1950. Since that time I have accumulated additional pertinent information and have come to realize that my reliance upon Attems's treatment of the group in *Das Tierreich* (1938) was in many instances ill-advised. In all, so many changes are necessary in the arrangement of the genera of this family that a second paper becomes advisable. While aware of the limitations imposed by the acute lack of critical study material, I am nonetheless convinced that even preliminary attempts at synthesis are badly needed at present. Half a loaf is better than none at all.

In the light of the preceding comments it may seem improper to refer to the works of the late Carl Attems in any vein other than one of utmost respect. Attems was the only recent worker with the industry and ability to produce manuals of the scope of his 3-volume "Polydesmoidea," yet while this magnificent compilation stands as a memorial to its gifted author, its minor imperfections will long be the despair of the uncritical user. Outstanding are Attems's disregard of the works of some of his colleagues (notably Cook and Silvestri), and a most remarkable indifference to the principles of type fixation. Some of these idiosyncrasies will be noted further on in the text.

Aside from information gathered from the literature, I have based this paper to a considerable extent upon Central American specimens preserved in my personal collection and that of the United States National Museum. This study material is very uneven as regards the genera represented. In the case of *Pseudamplinus*, I have adequate material to justify the preparation of a generic revision, which is now in progress. There seems to be no advantage in delaying the descriptions of the various new forms in other genera, however; these are given herewith, with at least a modicum of attention to their relationships to established species. In general the present paper is concerned with changes and additions on a generic level. It is assumed that the reader has access to the earlier paper mentioned above, which lists the species in the various genera not dealt with here.

It is with pleasure that I must again mention my increasing indebtedness to Dr. E. A. Chapin, for access to the collections of the National Museum and for much advice and information pertinent to the completion of the present study. I am also grateful to Dr. W. J. Gertsch, through whose cooperation I was able to examine material in the collection of the American Museum of Natural History.

## Family EURYURIDAE Pocock

- Trachelorhacidae Silvestri, Boll. Mus. Torino 13 (324): 5. 1898 (based upon *Trachelorhacis* Silvestri, a preoccupied name).

Euryurinae Pocock, *Biologia Centrali-Americana*, Chilopoda and Diplopoda: 113, 147. 1909.

Euryurini Brolemann, *Ann. Soc. Ent. France* **84**: 584. 1915.

Euryuridae Chamberlin, *Bull. Mus. Comp. Zool.* **62**: 249. 1918.—Hoffman, *Proc. U. S. Nat. Mus.* **102**: 235. 1951.

*Genera*.—18, of which 13 are found in the Western Hemisphere.

*Range*.—North Carolina, western Pennsylvania, and Minnesota south through Central America to Ecuador, northeastern Peru, and northern Brazil. Celebes, Halmahera, Ternate, Timor, and the Solomon Islands.

*Definition*.—A small family of the suborder Eurydesmidea (= Leptodesmidi of Brolemann, 1915), resembling the Platyrrhacidae in the presence of (1) closely-set antennae each subtended by an oval swelling, (2) small sternites with the legs basally approximate, (3) a broad distally truncate terminal segment (telson), and (4) small, rather simple gonopods in a proportionately small, somewhat diamond-shaped aperture. The gonopods are similar in lacking a definite prefemoral process. From the Platyrrhacidae, the members of this family differ chiefly in that the repugnatorial pores are located in the sides of definite marginal swellings of the keels. The pores in species of the Platyrrhacidae are more or less remote from the edges of the keels, and are encircled by a flat polished area; the keels themselves have no marginal ridges or thickenings. In the absence of any intermediate condition, it seems best to follow the example of my predecessors, who have found it expedient to set the euryurid genera apart in a separate family. Attems, however, lumps the two groups in his recent (1938) survey.

With the increasing significance that is being attached to the taxonomic value of the male genitalia, it appears possible to further divide the euryurids into several groups of genera, each rather discrete and readily defined. Since the recognition of such ensembles is a substantial aid to an understanding of the affinities of the genera, I think it advisable to designate them by the use of subfamily names, proposed towards the conclusion of the discussion.

A comment on the use of the family name may be of interest. In 1938 Attems proposed the name *Eutheatus* as a substitute for *Euryurus* of Koch, 1847, as the latter name had already been published in 1815 by C. S. Rafinesque for a group of polychaete annelids. I have examined a copy of the Rafinesque paper, the *Analyse de la nature*

ou *Tableau de l'univers et des corps organisés* (Palermo, 1815), and find that the name *Euryurus* is given merely in a list of generic names. There is no description, no reference to a description, and no specific name cited, and the name may be regarded a *nomen nudum*. According to the International Rules of Zoological Nomenclature, generic names of this nature may be, if properly proposed, used again for other forms by later workers. *Eutheatus* in consequence was proposed without justification, it becomes a junior synonym of *Euryurus* Koch, 1847.

#### Genus *Amplinus* Attems

*Amplinus* (*sic*) Attems, *Denk. Akad. Wien* **68**: 281, 396. 1899 (as subgenus of *Pachyurus*).

*Polylepis* (in part) Attems, *Das Tierreich* **69**: 300. 1938 (not *Polylepis* in the sense of Pocock 1909).

*Phinotropis* Chamberlin, *Bull. Amer. Mus. Nat. Hist.* **78**: 499. 1941.—Hoffman, *Proc. U. S. Nat. Mus.* **102**: 239. 1951 (type, *Phinotropis tidus* Chamberlin).

*Type*.—*Pachyurus* (*Amplinus*) *kalonotus* Attems, by designation of Pocock, 1909.

*Diagnosis*.—A euryurid genus characterized as follows: head with prominent subantennal swellings, collum as wide as second segment, tergites with prominent quadrate areas, telson broadly quadrate in shape, preanal scale subacuminate or rounded and with very small lateral setiferous tubercules.

Male gonopods with elongate trachial rods, coxae somewhat rounded-elongate, prefemur and femur fused into a short, straight trunk, a long slender solenomerite and an elongate laminate tibiotarsus are set off from the femur by a perceptible joint.

*Range*.—Upper Amazonian basin, in western Brazil, eastern Ecuador, and northeastern Peru.

*Species*.—Five, listed in my 1951 paper under *Phinotropis*.

*Remarks*.—As originally proposed, *Amplinus* included six species: *Pachyurus kalonotus* Attems and *P. acuticollis* Attems, *Polydesmus klugii* Brandt, *P. erichsoni* Brandt, *P. abstrusus* Karsch, and *P. ater* Peters. No type species was designated. In 1909 Pocock selected *kalonotus* as type, and added six more species from Central America to the genus. But within the genus as understood by Pocock there were representatives of two different groups. In one of them (including *kalonotus*, *acuticollis*, and presumably *ater*) the preanal scale is of the usual polydesmoid form—subtriangular to semicircular. In the other group,

however, it is trapeziform in shape, that is to say, distally truncate instead of acute or rounded, with the caudal margin parallel to the basal edge and with the lateral setiferous tubercles considerably enlarged. This difference has come to be unanimously regarded by students of diplopods as one of generic value. It is very unfortunate that the name *Amplinus* has been misapplied, by all workers subsequent to Pocock, to the group having the truncate or concave preanal scale.

In his most recent treatment of the polydesmoids (Das Tierreich, Lief. 68-70) Attems erroneously cites *Polydesmus klugii* of Brandt as type of *Amplinus*, and, moreover, places *kalonotus* and its relatives in Pocock's genus *Polylepiscus*. That this association is untenable taxonomically as well as nomenclatorially is evidenced by differences in the gonopods of the various species involved. The Guatemalan species included by Pocock in *Polylepiscus* have, in addition to the spiculiform solenomerite, a somewhat similar branch from the base of the tibiotarsal blade. The South American species under consideration lack this additional process, and the tibiotarsus of their gonopods is also longer and more sinuate. Realization that they could not be properly placed in *Polylepiscus* induced me to group them under Chamberlin's name *Phinotropis*, based upon *P. tidus*—a Peruvian species which is obviously congeneric with *kalonotus*. So the discovery that *kalonotus* is the true type species of *Amplinus* requires relegation of *Phinotropis* to the status of a junior synonym, and proposal of a new generic name for the Central American species heretofore called *Amplinus*. In reference to its mistaken identity, the group may be called

***Pseudamplinus*, n. gen.**

*Type*.—*Amplinus orphinus* Chamberlin 1922, by present designation.

*Diagnosis*.—A euryurid genus characterized as follows: head with prominent subantennal swellings, collum as wide as second tergite, tergites strongly tessellated in most species, telson broadly truncate distally and quadrate in appearance, preanal scale trapeziform in shape with the lateral setiferous tubercles very large and the margin between them straight or concave.

Male gonopods with very long slender trachial rods; coxae rather slender; prefemora and femora fused into a straight trunk; a slender blade-like solenomerite and a thin flattened tibiotarsal branch, both directed at nearly a right angle to

the femoral portion, are set off from this by a perceptible joint or suture, both of these terminal elements are directed away from the coxal joint.

This is the only genus of the family having the truncate or distally concave preanal scale which is so characteristic of the Platyrrhacidae, and may be regarded as a sort of intermediate group. In the form of the keels, however, the relationship is clearly with the other euryurids.

*Range*.—Middle America, from southern Mexico (Guerrero and Vera Cruz) south to Costa Rica, and also northwestern Venezuela. Most of the species occur in Guatemala and in Vera Cruz.

*Species*.—23, as follows: *abstrusus* (Karsch), *areatus* (Pocock), *armatus* (Pocock), *beebei* (Chamberlin), *convexus* (Carl), *crenus* (Chamberlin), *eutypus* (Chamberlin), *erichsoni* (Brandt), *flavicornis* (Pocock), *klugii* (Brandt), *leon* (Chamberlin), *manni* (Chamberlin), *niteus* (Chamberlin), *nitidus* (Brolemann), *orphinus* (Chamberlin), *palicaudatus* (Attems), *pococki* (Cook), *schmidti* (Chamberlin), *tajumulco* (Chamberlin), *tapachulale* (Chamberlin), *triramus* (Pocock), *xelitus* (Chamberlin), *zumulus* (*sic*) (Chamberlin).

*Remarks*.—Inasmuch as no members of this genus have yet been collected in Panama, the presence of two rather similar forms in northwestern Venezuela is of some interest. These species, *abstrusus* and *beebei*, agree with each other and differ from other members of the genus in having a rather shortened solenomerite. Karsch's type came from Puerto Bello, Chamberlin's from Rancho Grande, about 35 miles to the south. The similarities between the two suggest synonymy, or at best a subspecific relationship.

Redescription of several poorly known species, based upon material in my possession, is planned for inclusion in my forthcoming revision of this genus.

Although Pocock clearly disposed of the mystery surrounding the matter of the type species of *Orthomorpha*—designating *Polydesmus beaumonti* Le Guillou following the elimination of all other species from the genus *Paradesmus* by Saussure, a remarkable effort was made by Cook in 1911 to restrict the name *Orthomorpha* to members of the present genus! But Cook's proposal was based upon a highly subjective line of reasoning having absolutely no basis in fact, and no subsequent writer has ever discussed or even referred to it. The matter, in brief, may be summarized as follows: in 1859 the genus *Paradesmus* was erected by Saussure for five species



distributed in three groups. The first contained only *Polydesmus carolinensis*, the second *P. klugii*, *P. erichsoni*, and *P. picteti*, and the third only *P. beaumonti*. As Pocock pointed out, one of these five species must be the type, the addition of *coarctatus* in 1860 having no bearing on the question. In 1869 Humbert and Saussure provided the name *Euryurus* of Koch for *carolinensis*, and *Pachyurus* for the three species of the second group, leaving *beaumonti* as the only species in *Paradesmus*. Cook observed that since Saussure had implied in 1859 that *beaumonti* was not a typical member of the genus *Paradesmus* (in the sense that it differed considerably from the other species), that generic name, and its replacement *Orthomorpha* should be properly applied to the members of the second group—*klugii*, *erichsoni*, and *picteti*.

On the other hand, Cook also pointed out that the species described and illustrated as *klugii* by Pocock in the *Biologia* differed in several respects from the type specimen of the species, which he had seen in the Berlin Museum, and suggested the name *pococki* for the form treated in the *Biologia* as *klugii*. Cook's perception of specific differences was a good one, and it may be reasonably admitted that he was correct in this particular. I therefore list *pococki* in the roster of species given above. It is to be hoped that material from Alvarado, Vera Cruz (the type locality of *klugii*) will soon be forthcoming to permit a final settlement of the confusion which surrounds application of the name.

#### Genus *Polylepiscus* Pocock

*Polylepiscus* Pocock, *Biologia Centrali-Americana*, Chilopoda and Diplopoda: 154. 1909.  
*Euplinus* Chamberlin, *Ann. Ent. Soc. Amer.* 45: 578. 1952 (type: *E. volcanicola* Chamberlin, by original designation).

*Polylepiscus* appears to be a genus more or less endemic to the Guatemalan plateau, and individuals seem to be scarce, to judge from the few preserved in museum collections. It is noteworthy that no additions to the genus have been made since Pocock's original description and account in the *Biologia*<sup>1</sup>. It is to that reference,

<sup>1</sup> *Euplinus volcanicola* has recently been described as a new genus and species and was contrasted only with *Amplinus* in the generic diagnosis. One can never understand why *Polylepiscus*, beautifully illustrated and thoroughly described in the *Biologia*, was not taken into consideration. Not only is *Euplinus* a junior generic synonym, but furthermore I can not see how *volcanicola* differs in any respect from *P. furcifer* Pocock.

therefore, that appeal must be made for information pertinent to the allocation of the new forms.

Pocock found that the genus was divisible into two groups on the basis of several correlated structural features. The following key is based upon that presented by him, with a few changes.

#### KEY TO THE KNOWN FORMS OF POLYLEPISCUS

1. Pores of 19th segment completely lateral; metatergites smooth or nearly so, polygonal areas well-defined or obsolete but not obscured by granulation of dorsum.....2  
 Pores of 19th segment on dorsal side of keels; dorsum rugulose or granular, the polygonal areas obscured.....4
2. Dorsum entirely smooth, no trace of areas except a few vaguely defined on keels; a mid-dorsal row of large oval spots present  
*trimaculatus*, n. sp.  
 Dorsum with polygonal areas well defined; no middorsal row of spots.....3
3. Polygonal areas smooth, not tubercular, except obscurely so on the keels  
*stolli* Pocock  
 Polygonal areas manifestly tubercular  
*furcifer* Pocock
4. Keels of posterior half of body with anterior border basally produced, posterior border from 13th to 18th distinctly shouldered at base, 19th tergite granular  
*actacon* Pocock  
 Keels of posterior half of body with anterior border less produced; posterior border strongly concave, not shouldered, 19th tergite granular only posteriorly or smooth. 5
5. Tibiotarsus of male gonopod less curved, not crossing behind tip of tibiotarsal process; 19th tergite granular over posterior half  
*h. heterosculptus* Carl  
 Tibiotarsus of male gonopod more acutely bent, in mesial aspect crossing behind tip of tibiotarsal process; 19th segment almost entirely smooth.....*h. pococki*, n. subsp.

It is to be especially noted that, with the exception of *stolli* (from Chohuitz, Guatemala), the previously known species have not been recorded from any definite locality. A considerable amount of work thus remains to be done in the way of defining the ranges of the different forms. Material of *trimaculatus*, on the other hand, has been obtained at several localities; and *heterosculptus pococki* is here described from north-eastern Chiapas, extending the known range of the genus slightly outside the political limits of Guatemala.

#### *Polylepiscus furcifer* Pocock

*Polylepiscus furcifer* Pocock, *Biologia Centrali-Americana*, Chilopoda and Diplopoda: 156, pl. 12, figs. 1-1h. 1909.

*Euplinus volcanicola* Chamberlin, Ann. Ent. Soc. Amer. 45: 578, fig. 43. 1952.

The type locality of *volcanicola*, Volcán Tajumulco, Guatemala, provides the first definite locality from which *furcifer* has been taken. Pocock's type specimen was without any locality data.

***Polylepiscus trimaculatus*, n. sp.**

Fig. 2

*Type specimen*.—Male holotype, U. S. Nat. Mus. no. 2098, from Sepaciate, Guatemala, collected in March 1902 by O. F. Cook. *Allotype* a female with the same collection data.

*Diagnosis*.—Readily separable from the other members of this genus by the smooth dorsum, trimaculate color pattern, and configuration of the male gonopod. The lateral position of the pores allies this form with *stolli* and *furcifer*. The prefemero-femoral portion of the gonopod is proportionately smaller in relation to the tibiotarsus than in the other species of which males are known.

*Description*.—The general body form coincides closely with the descriptions given by Pocock. The following notes were made from the type specimens:

Length of male, 62, width, 11 mm.; length of female, 60, width, 9.5 mm. Dorsum entirely smooth except for faint indications of areas on the keels; metazonites considerably raised above level of prozonites. Keels of segments 3–19 produced caudad, their caudal margins concave and finely serrate; pores all completely lateral. Telson broadly rounded. Preanal scale subtriangular but distally rounded. Pleurites coarsely granular, with a series of acute tubercles along the caudal margins, becoming larger on the posterior segments, frequently a small cluster of spines just below the projection of the keels.

Sternites and basal segments of legs smooth and glabrous. The raised area between the leg-pairs of each segment impressed by a longitudinal and a transverse furrow, creating a small tumid area at the base of each leg. Distal segments of legs sparingly hirsute. Bases of last pair of legs almost in contact.

Gonopod aperture of male rather small and ovoid, with raised margins. Gonopods with long slender trachial rods; the coxae small and cylindrical. Basal half of telopodite densely setose. Distal half set off by a distinct groove or suture. Solenomerite long and slender, unmodified, very slightly sinuous. Tibiotarsus somewhat broader, laminate,

its distal end bent at a right angle; tibiotarsal process slender, unmodified, gently curved distad toward the tibiotarsus.

Color of the preserved specimens as follows: dorsum chocolate brown to blackish; underparts light brown to tan. All of the upper surface of the keels and a large ovate median spot on each segment lighter. Collum with an hourglass-shaped mark. A label with the specimens reads "Spots, carinae, legs, and antennae pale grayish, nearly white", this presumably referring to the condition in life.

*Remarks*.—Additional material of *trimaculatus* has been seen from the following localities: GUATEMALA.—Pancajche, several taken in May 1905 by G. P. Goll; Trece Aguas, April 21, 1906 and June 1907 by O. F. Cook (all U. S. N. M.).

***Polylepiscus heterosculptus pococki*, n. subsp.**

Fig. 1

*Type specimen*.—Adult male holotype, U. S. Natl. Mus. no. 2099, from Tumbala, State of Chiapas, Mexico, collected on June 20, 1906, by O. F. Cook.

*Diagnosis*.—Very similar to *P. h. heterosculptus*, from which it may be distinguished by the contrasting features given in the following couplet:

Size large, length 80–90 mm, width, 13–15 mm; dorsum with conspicuous transverse rows of tubercles; caudolateral corners of keels of segments 5–16 produced caudally; keels, legs, and antennae reddish brown to blackish brown; 19th tergite granular posteriorly; tibiotarsus of male gonopod slender, distally recurved away from the solenomerite

*h. heterosculptus* Carl  
Size smaller, length 60–65 mm, width, 9–11 mm, dorsal rows of tubercles less pronounced; caudolateral corners of keels of segments 4–16 produced caudad; legs, antennae, and keels yellowish; 19th tergite entirely smooth; tibiotarsus of gonopod heavier, crossing behind tip of solenomerite...*h. pococki*, n. subsp.

With the foregoing exceptions, *pococki* agrees so well with the excellent description of *heterosculptus* given by Carl that a description of my type series seems unnecessary. The differences between the two forms, while not impressive singly, are sufficient when taken in combination to warrant separation of a new subspecies. It is to be regretted that we are ignorant of the provenance of Carl's material.

This form is named in recognition of R. I. Pocock's outstanding contribution to our knowledge of the diplopod fauna of Central America.

Genus *Colomborus* Chamberlin

*Colomborus* Chamberlin, Ann. Ent. Soc. Amer. **45**: 587. 1952.

*Type*.—*Colomborus martanus* Chamberlin (= *Pycnotropis colombiensis* Chamberlin, 1923).

*Range*.—Colombia.

*Species*.—1.

*Remarks*.—There is no doubt that the type of this genus is worthy of systematic recognition. It is interesting to note, however, that *Colomborus* was proposed as a monotypic genus based upon a new species, despite the fact that this species had obviously already been described. One must presume that Chamberlin, in working up the material for his 1951 paper, did not even take into consideration his own earlier (1923) contribution on the millipeds of Colombia in which the species was first recognized under the name *Pycnotropis colombiensis*. I am unable to discern any specific differences in the illustrations of the male genitalia (1923: fig. 112; 1952: fig. 42).

Genus *Protaphelidesmus* Brolemann

*Protaphelidesmus* Brolemann, Ann. Soc. Ent. France **84**: 559. 1915—Attems, Das Tierreich **69**: 313. 1938.—Hoffman, Proc. U. S. Nat. Mus. **102**: 240. 1951.

*Ptyxogon* Chamberlin, Bull. Amer. Mus. Nat. Hist. **78**: 500. 1941.—Hoffman, Proc. U. S. Nat. Mus. **102**: 240. 1951 (type: *P. incus* Chamberlin, by original designation).

*Type*.—*Platyrrhacus ligula* Brolemann.

*Range*.—Venezuela; northeastern Peru.

*Species*.—3: *ligulus* Brolemann, *incus* Chamberlin, *levigatus* Attems.

*Remarks*.—Since completing my first paper on this group, in which *Ptyxogon* was held distinct on the basis of smooth tergites, I have carefully reconsidered the drawings and descriptions of all three of the species involved, as well as the type of *P. incus*, and no longer believe that two genera can be recognized. Jeekel, writing on East Indian stronglylosomoids, has recently emphasized the intrageneric variability of body form, and reiterated the primary importance of the male gonopods. I have reached the same conclusions from recently acquired familiarity with several groups of tropical diplopods. The sculpture of the tergites, without substantiating genital features, can scarcely be considered of generic value.

Genus *Seminelloxon* Chamberlin

*Seminelloxon* Chamberlin, Pan-Pacific Ent. **9** (1): 18. 1933.

*Type*.—*S. chitarianus* Chamberlin, by original designation.

*Range*.—Costa Rica; Panama.

*Species*.—2: *chitarianus* Chamberlin, *cerroazulensis*, n. sp.

*Remarks*.—This genus was overlooked in the preparation of my previous paper, primarily because it was described as being closely related to *Aphelidesmus* and thus listed by Attems in 1937 amongst the "unsichere Gattungen" of the Strongylosomidae. *Seminelloxon* is of course a euryurid, and very close to *Amplinus*, into which it and several others may have to be withdrawn. A possible generic character, of unproven value, is the location of the pores on the *under side* of the keels of the 18th and 19th segments. In this respect it differs from the Central American genera, but I have not been able to study the South American forms in this respect.

*Seminelloxon* heretofore has been monotypical. A new species is here described from the high mountains of northwestern Panama, and based upon fairly large and homogeneous series. Considering the quality level of the differences, however, it would not be surprising if the new form is later shown to be a subspecies of *chitarianus*.

*Seminelloxon cerroazulensis*, n. sp.

Fig. 3

*Type specimens*.—Male holotype, U. S. Nat. Mus. no. 2100, from Cerro Azul, Province of Chiriquí, Panama, collected on March 26, 1911, by E. A. Goldman. Male and female paratypes from Boquete, Chiriqui Province, Panama, January 1940, W. C. Wood (Amer. Mus. Nat. Hist. A-7175) and from El Volcán, Chiriquí Province, Panama, February 28, 1936, W. J. Gertsch (Amer. Mus. Nat. Hist.).

*Diagnosis*.—Differing from *S. chitarianus* primarily in the characters of the male gonopod, such as the longer and less curved solenomerite; the much more slender tibiotarsus with a prominent broadening near its base; and the distinctly shorter basal, setose, portion of the telopodite.

*Description*.—Agreeing in most respects with the description of *chitarianus* given by Chamberlin. The following specific notes were made from the type specimen.

Length, 44, width, 6 mm. Dorsum, sides, and ventral surfaces all entirely smooth and shining, no evidence of granulation or other roughening. Front edge of keels not shouldered, but forming an even arc back to the caudolateral corner.

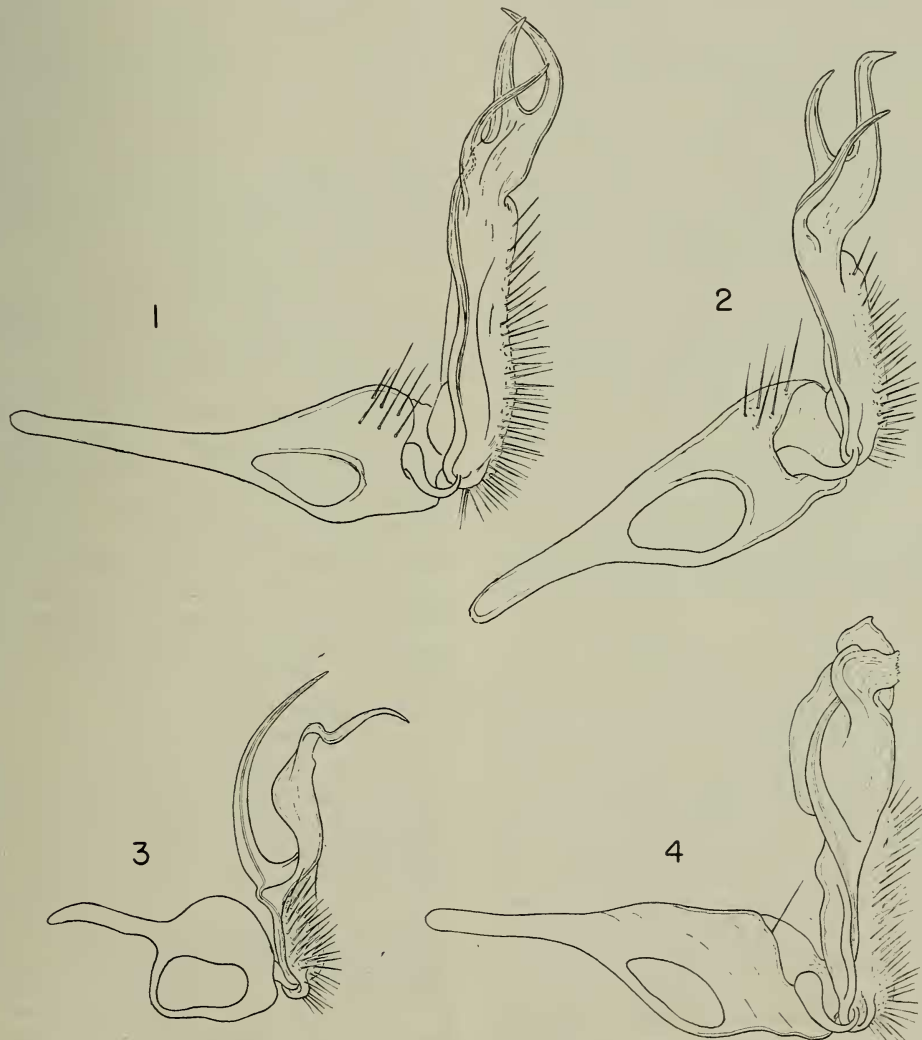


Latter very little produced except on the last few segments. Caudal margin of keels nearly straight, not concave or shouldered basally. Pores lateral on all keels except the 18th and 19th, where they are distinctly inferior, on the under side. Telson almost square, with rounded corners, but slightly longer than broad. Sternites not distinctly impressed, nor lobed at the bases of the legs.

Male gonopod (Fig. 3) with a short slender tracheal rod; coxa rather globose and large in proportion to the rest of the gonopod; prefemur-femur short, heavily setose, its front margin produced into a flange overlapping most of the

course of the seminal channel. Tibiotarsus set off by a conspicuous suture, its basal half broad and laminate with a conspicuous lobe on one side, distad of which it becomes abruptly more slender and sigmoidally bent, tapering gradually to its tip. Solenomerite very long, almost length of tibiotarsus, gently curved and gradually tapering distad, without branches or other modifications.

Dorsum light brown with the keels and a large trapeziform area in the middle of each metatergite yellow, the latter giving the effect of a continuous, broadly serrate median dorsal band. Prozonites entirely yellow. Color of legs, sternites, and antennae probably also yellow in life.



FIGS. 1-4.—1, *Polylepiscus heterosculptus pococki*, n. subsp., left gonopod of paratype, Tumbala, Chiapas; 2, *P. trimaculatus*, n. sp., left gonopod of holotype, Sepaciate, Guatemala; 3, *Seminellogon cerroazulensis*, n. sp., left gonopod of holotype, Cerro Azul, Panama; 4, *Varyomus confluens* (Chamberlin), left gonopod of male holotype, Rancho Grande, Venezuela. All figures to same scale, showing gonopod in mesial aspect.

Genus *Aphelidesmus* Brolemann<sup>2</sup>

*Aphelidesmus* Brolemann, Ann. Soc. Ent. France **67**: 322. 1898; Ann. Soc. Ent. France **84**: 584. 1915—Carl, Mem. Soc. Neuchat. Sci. Nat. **5**: 936. 1914—Attems, Rev. Zool. Bot. Afr. **17**: 280. 1929; Das Tierreich **68**: 128. 1937.

*Type*.—*A. hermaphroditus* Brolemann, by original designation.

*Diagnosis*.—A genus of the Euryuridae in which the tibiotarsus of the male gonopod is generally elongated and considerably expanded-laminate, forming a shield-like or spathe-like arrangement which partially or entirely encloses the long slender solenomerite. Femur of gonopod distally rotated almost 360°, causing the seminal groove to completely encircle the base of the tibiotarsus before entering upon the solenomerite.

*Range*.—From the State of Pará, Brazil, north through the Guianas and Venezuela to Colombia and Ecuador, thence north along the Atlantic coast of Central America to extreme southern Texas. Most of the species occur in Colombia.

*Species*.—29, as follows: *alboarinatus* (Peters), *ambiguus* Carl, *areatus* (Peters), *asper* Attems, *aterrimus* Attems, *atratus* (Pocock), *bellus* Attems, *convexus* Jeekel, *dealbatus* (Gervais), *divergens* (Chamberlin), *elongatus* (Brolemann), *frangens* Chamberlin, *fumigatus* (Peters), *glaphyros* (Attems), *goudoti* (Gervais), *guianiensis* Chamberlin, *hermaphroditus* Brolemann, *hybridus* (Peters), *intermedius* Chamberlin, *major* Chamberlin, *octocentrus* (Brolemann), *panamanicus* Chamberlin, *rivicola* (Silvestri), *roulini* (Gervais), *semicinctus* (Peters), *surinamensis* Jeekel, *tertius* (Chamberlin), *tripunctatus* (Peters), *uncinatus* (Peters).

*Remarks*.—Many of the species referred to *Aphelidesmus* were originally described under the generic name *Euryurus* (including two named by Brolemann six years after he had proposed *Aphelidesmus*!); and most subsequent writers such as Pocock, Carl, and Chamberlin have associated the genus with other euryurid groups. Despite this body of precedence, however, the genus was removed from the Euryuridae and relocated in the family Strongylosomidae by Attems in his 1929 summary of the group. It was out of respect of his authority that I omitted *Aphelidesmus* from my 1951 paper. Later consideration has convinced me that Attems was

in error, an opinion which is shared by my colleague C. A. W. Jeekel, who has worked upon both *Aphelidesmus* and many stronglylosomoid genera from Asia. Mr. Jeekel suspects that Attems may have been influenced primarily by the elongated and partly concealed solenomerite of *Aphelidesmus* species. In other respects, including the two cited as diagnostic of the Strongylosomidae by Attems (i.e., median constriction of the gonopod aperture and independence of the gonopod coxae) these species do not qualify as stronglylosomid.

This is the largest genus in the Euryuridae, there being some 29 species (many of which are known only from female type specimens); the range extends from Texas to northern Brasil, with most of the forms concentrated in the Colombia-Venezuela region. It seems not unlikely that the group as here comprised may be divided into two or more genera. At least one species described in the genus is not congeneric with *A. hermaphroditus*, and a new name is proposed for its accomodation.

*Varyomus*, n. gen.<sup>3</sup>

*Type*.—*Aphelidesmus confluens* Chamberlin 1950, by present designation.

*Diagnosis*.—A euryurid genus characterized as follows: similar in most respects to *Aphelidesmus* but differing in that the distal half of the gonopod telopodite is not twisted on its axis, and the seminal canal proceeds directly to the solenomerite without first encircling the gonopod. The solenomerite itself is long and slender and distally protected by several laminate expansions of the tibiotarsus, but even these are different in appearance from the analogous structures in *Aphelidesmus*.

*Range*.—Northern Venezuela.

*Species*.—One.

*Remarks*.—Through the kindness of Dr. W. J. Gertsch, I was able to re-examine the type specimen of *Aphelidesmus confluens* in the American Museum collection, and provide herewith an illustration of the left gonopod as seen in mesial aspect. It will be apparent that the appendage is considerably different from those of typical *Aphelidesmids*, and this situation is additional evidence of the futility of drawing gonopods from whatever position happens to be convenient.

<sup>3</sup> Named for Dr. Ralph Vary Chamberlin, the describer of perhaps the majority of American milliped species.

<sup>2</sup> *Trachelorhacis* Silvestri 1898, which has three months priority over *Aphelidesmus* as a name for this genus, is a junior primary homonym of *Trachelorhacis* Agassiz, 1846.



SUMMARY

It now appears that three groups can be discerned amongst the American genera of the Euryuridae (perhaps the Oriental genera, of which I have not seen material, belong to still another) as reflected by various trenchant differences in the male genitalia. Two of these have already been recognized by Brolemann, as long ago as 1915, who set *Aphelidesmus* and *Protaphelidesmus* apart in a separate subfamily which he called Aphelidesminae. His arrangement of the platyrhacoid diplopods was as follows:

- Family Platyrhacidae
- Subfamily Platyrhacinae
- Tribe Platyrhacini
- Tribe Euryurini
- Subfamily Aphelidesminae

It will be noted that the Aphelidesminae was given a rank equivalent to what would now be regarded as a superfamily including the Platyrhacidae and Euryuridae (a position which I believe in the light of present knowledge to be too exalted). That Silvestri was equally impressed by the characters of his synonymical genus *Trachelorhacis* is evidenced by the new family which he proposed for the reception of *T. rivicola*.

In admitting that the distinction generally accorded *Aphelidesmus* is probably well-founded, one has to recognize that as much or more difference obtains between *Euryurus* and *Amplinus* as between those two genera on one hand and *Aphelidesmus* on the other. Giving these differences a coordinate degree of recognition requires the establishment of a third subfamily. These groups may be distinguished and diagnosed as follows:

KEY TO THE SUBFAMILIES OF EURYURIDAE

1. Tibiotarsus of male gonopod substantially expanded into a broad sheath, which shields or actually encloses solenomerite branch and which often has one or more small processes of its own  
 Subfamily I. Aphelidesminae Brolemann  
 Tibiotarsus of male gonopod generally long (reduced in one genus), very seldom broadened, never forming a protective element for solenomerite (when one is present).....2

2. No definite solenomerite present; telopodite of gonopod simple, tibiotarsal joint not set off by a conspicuous articulation

Subfamily II. Euryurinae, n. subf.<sup>4</sup>

- A long slender solenomerite present, arising at base of tibiotarsus; telopodite of gonopod with a definite joint or line of separation between femur and tibiotarsus

Subfamily III. Amplininae, n. subf.

The genera belonging to these groups may be in turn separated by the following keys:

KEY TO THE GENERA OF THE APHELIDESMINAE

1. Tibiotarsus of gonopod twisted almost 360° on axis of telopodite, seminal canal making a complete circuit around gonopod before entering on solenomerite, latter concealed or partly enclosed by tibiotarsus, which forms a sheath.....*Aphelidesmus* Brolemann  
 Tibiotarsus of gonopod not rotated on its axis; seminal canal running directly to solenomerite; latter not shielded or concealed by tibiotarsus.....2
2. Solenomerite short, upright, arising from near base of tibiotarsal blade; latter without secondary processes

*Protaphelidesmus* Brolemann

- Solenomerite long, arising from middle of femoral portion of gonopod; tibiotarsal portion composed of two laminate processes which conceal tip of solenomerite

*Varyomus* Hoffman

KEY TO THE GENERA OF THE EURYURINAE

1. Gonopod relatively long and slender, tibiotarsal portion present and with a small subterminal process.....*Euryurus* Koch  
 Gonopod short and robust, tibiotarsal portion rudimentary, represented only by a short digitiform lobe.....*Auturus* Chamberlin

KEY TO THE GENERA OF THE AMPLININAE

1. Preanal scale distally truncate or concave, lateral tubercules large (23 species)  
*Pseudamplinus* Hoffman  
 Preanal scale subtriangular or broadly rounded, the lateral tubercules very small or absent...2
2. No subantennal swellings present (9 species)  
*Pycnotropis* Carl  
 Prominent subantennal swellings present...3
3. Male gonopods with a secondary tibiotarsal process in addition to the larger main blade; caudolateral corners of the keels rather prolonged into spiniform processes (5 species)  
*Polylepiscus* Pocock  
 Male gonopod without a secondary tibiotarsal branch.....4
4. Femoral portion of gonopod very stout and short, exceeded in length by the correspondingly elongated solenomerite.....5

<sup>4</sup> This name is proposed as new, being much more limited in its scope than Euryurinae as used by Pocock in the *Biologia*.

- Femoral portion of gonopod long and slender, exceeding the solenomerite and often tibiotarsus in length.....7
5. Tibiotarsus of gonopod generally slender, unmodified, distally acuminate (2 species)  
*Seminelloxon* Chamberlin  
Tibiotarsus of gonopod distally modified.....6
6. Tibiotarsus slender, parallel-sided, bladelike, bifid distally (8 species)  
*Thrinorethus* Chamberlin  
Tibiotarsus broadly sigmoid, widest at midlength, distally trifid (1 species)  
*Sigmogonotropis* Hoffman
7. Tibiotarsus generally distally acuminate, occasionally expanded but never with spinous processes or teeth (5 species)  
*Amplinus* Attems  
Tibiotarsus broadened, blade-like with a conspicuous process at its midlength and several small subterminal teeth (1 species)  
*Colomborus* Chamberlin

Of the genera admitted to this key, there is considerable uncertainty in my mind concerning the status of the last five enumerated. Very little in the way of annectant forms would be required to necessitate consolidation of all of these nominal genera back into *Amplinus*. For the time being, however, they appear to be reasonably discrete and easily recognizable groupings; the gonopods being more distinctive than one would appreciate from the inadequate characterizations in the key.

In addition to the pores of the 18th and 19th segments of *Seminelloxon*, another character of unestablished taxonomic value is the presence or absence of subantennal swellings. I have never seen any specimens

of *Pycnotropis*; the information regarding this difference is derived from Attems. Considering the fallability of other characters employed in that author's key to the euryurid genera, this one must be held in suspicion until it has been more thoroughly investigated.

## REFERENCES

- ATTEMS, CARL GRAF. *Diplopoden des Belgischen Congo. I. Polydesmoidea*. Rev. Zool. Bot. Afr. **17** (3): 253-378. 1929.
- . *Fam. Strongylosomidae*. Das Tierreich **68**: 1-300. 1938.
- . *Fam. Leptodesmidae, Platyrrhacidae, Oxydesmidae, Gomphodesmidae*. Das Tierreich, **69**: 1-487. 1938.
- BROLEMANN, HENRI W. *Essai d'une classification des Polydesmiens*. Ann. Soc. Ent. France **84**: 523-608. 1915.
- CHAMBERLIN, RALPH V. *The millipeds of Central America*. Proc. U. S. Nat. Mus. **60** (8): 1-75. 1922.
- . *Results of the Bryant Walker Expeditions of the University of Michigan to Colombia, 1913, and British Guiana, 1914. The Diplopoda*. Occ. Pap. Mus. Zool. Univ. Michigan. no. 133: 1-143. 1923.
- . *On a collection of millipedes and centipedes from northeastern Peru*. Bull. Amer. Mus. Nat. Hist. **78** (7): 473-535. 1941.
- . *Neotropical chilopods and diplopods in the collections of the Department of Tropical Research, New York Zoological Society*. Zoologica **35** (2): 133-144. 1950.
- HOFFMAN, RICHARD L. *A new genus of Central American millipede (family Euryuridae), with notes on the American genera*. Proc. U. S. Nat. Mus. **102**: 235-243. 1951.

MALACOLOGY.—*Leiostracus* (?) *kugleri*, n. sp., a new bulimulid mollusk from Venezuela. LOTHAR FORCART, Museum of Natural History, Basle, Switzerland. (Communicated by Harald A. Rehder.)

Since 1922 Dr. H. G. Kugler and other Swiss geologists have been sending most interesting scientific collections from Venezuela and Trinidad to the Museum of Natural History in Basle (Switzerland). During the war, 1939-1945, when normal communications between South America and Switzerland were interrupted, Dr. Kugler sent malacological collections from Venezuela to the U. S. National Museum in Washington. Dr. H. A. Rehder recently entrusted this material to the author for determination. Shells of a species of Buli-

mulidae were identified with those the Museum in Basle received as early as 1926, and of which the revision established that they belong to a species hitherto undescribed. The species is dedicated to Dr. H. G. Kugler, to whom science owes much for the scientific exploration of Venezuela and Trinidad.

*Leiostracus* (?) *kugleri*, n. sp.

*Diagnosis*.—The shell is solid, elongate-turriculate, narrowly umbilicated; its color is white with ochraceous stripes, which are faded in worn shells; the apical whorls are yellowish to whitish.